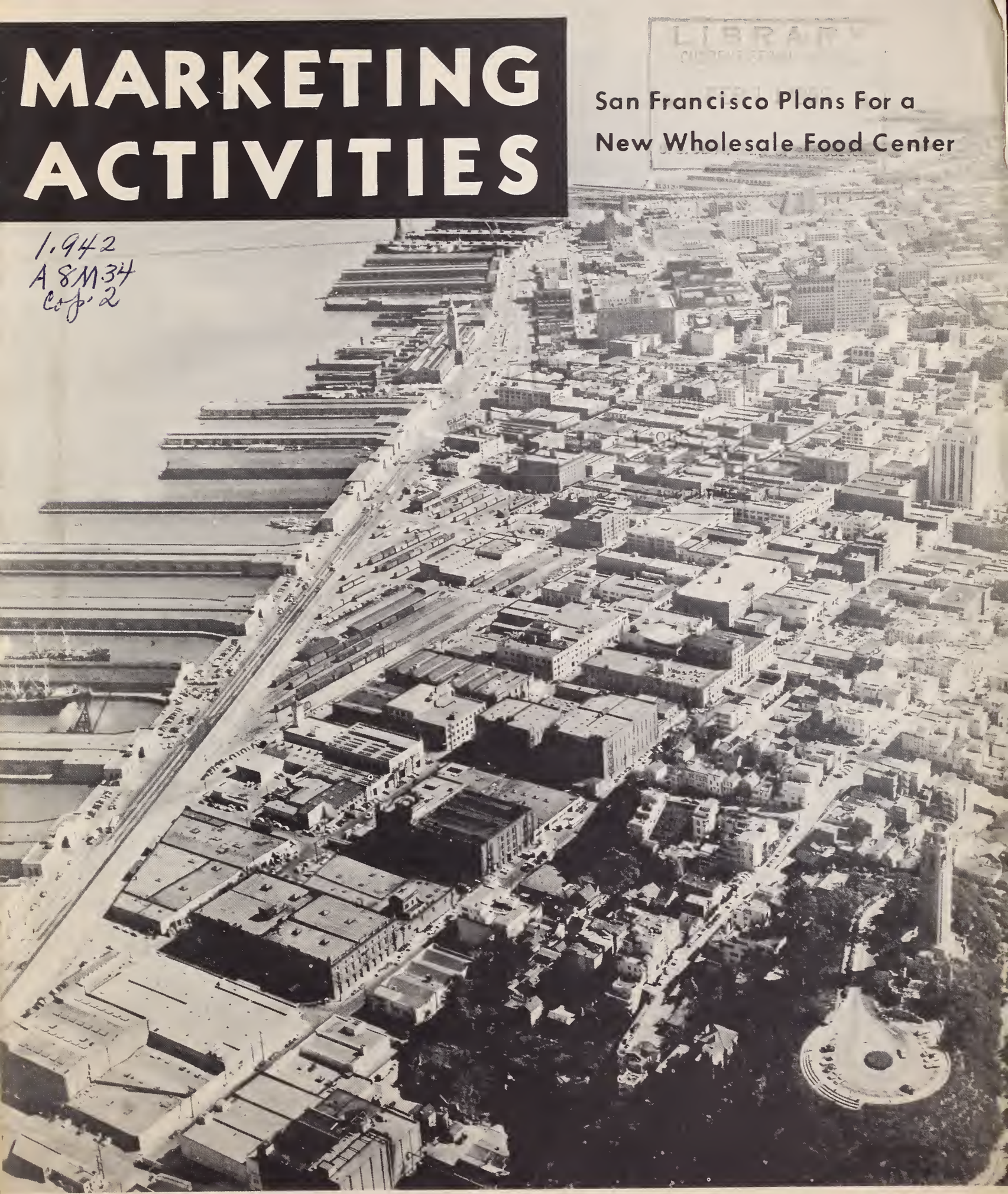
MARKETING ACTIVITIES

San Francisco Plans For a New Wholesale Food Center



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Editor, Milton Hoffman; Assistant Editor, Nick Kominus.

A New Table For Packing Cartoned Eggs

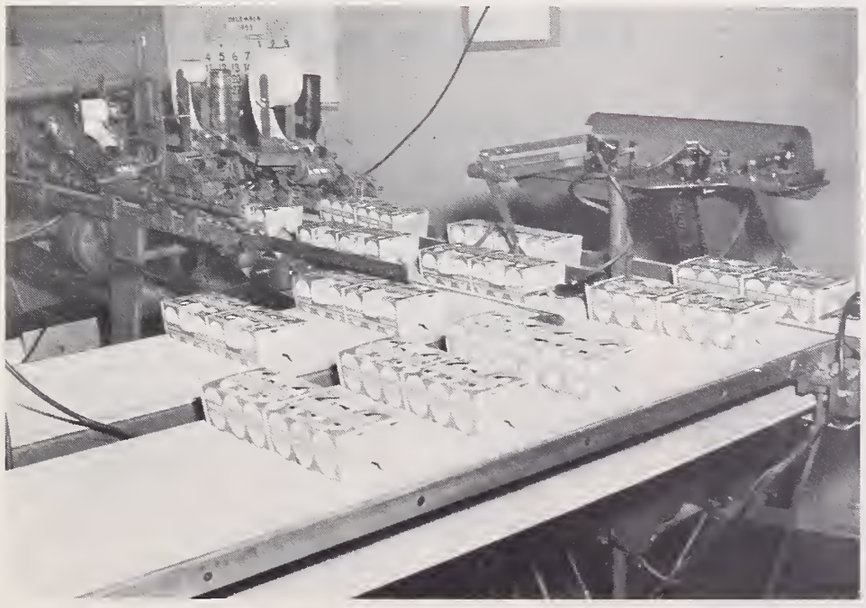
By Robert Stoyanoff, John Hamann, and E. J. Lawless

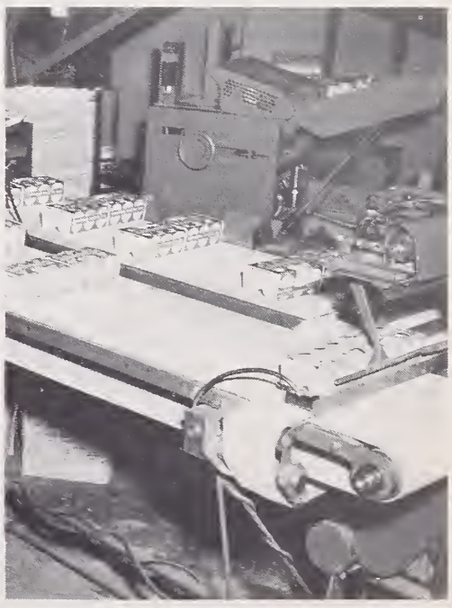
AMS's industrial engineers have developed a new type of table for packing cartoned eggs. The work was done in cooperation with the Pennsylvania State Department of Agriculture and the Pennsylvania State University, College of Agriculture.

The table, designed to reduce employee fatigue, increase employee productivity, and decrease the hazard of breakage, is a double-belt unit running perpendicular to the carton-closing and -sealing machine. It receives cartons of eggs from the double-closer unit by means of 2 take-off belts. Pusher-bars enable the belts to feed cartons to a double-belt conveyor. As each carton reaches the end of the belt-type table, it is held in position, before packing, by 2 gate brackets. In this way, a number of cartons accumulate on the table, without danger of falling off.

A micro-switch mechanism, attached to the holding brackets, shuts off the entire operation when the pressure exerted by a predetermined number of cartons increases. This safety feature prevents breakage and mashing of cartoned eggs.

Description of Table





The table (left) is about 7 feet long and 30 inches wide. It consists of 2 separate belt conveyors running parallel to each other at the same speed. At the end of the table (right) there are two 4-inch cross-feed belts which receive cartons from the closer unit. These cross-feed belts run over and perpendicular to the table belts.

Figure 1

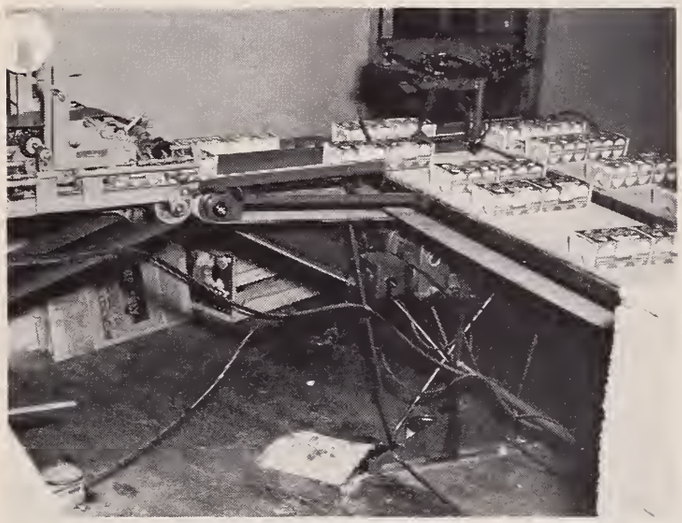


Figure 2

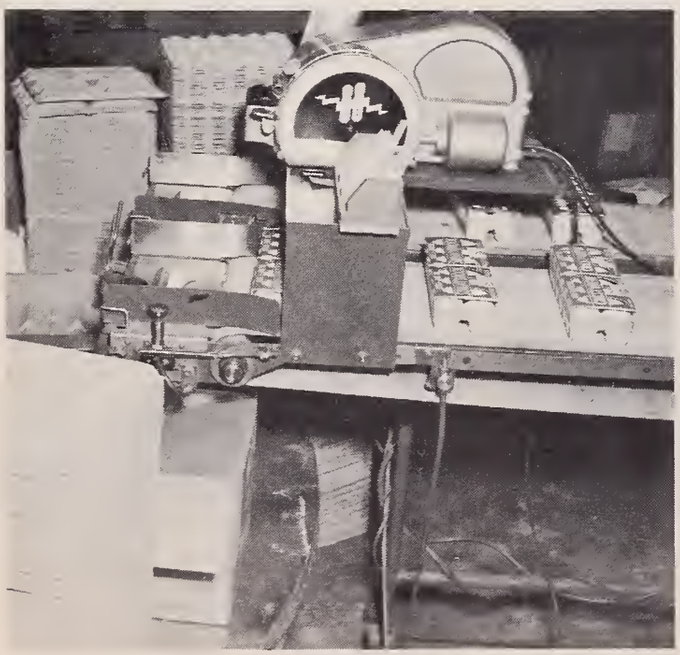


Figure 3

How It Works

Since the speed of the cross-feed belt is faster than that of the closer-unit, cartons leaving the unit are separated from each other and delivered to the corresponding belt conveyor by pusher-bar (fig. 1). The cycles of the pusher-bars are controlled by a solenoid mechanism which is dependent upon the rate of oncoming cartons from the closer.

As cartons approach pusher-bar, they are oriented perpendicular to the table (fig. 2). When a carton is aligned in position with the belt conveyor it trips a micro-switch. The micro-switch activates the solenoid which is attached to a drive shaft. The pusher-bar connected to drive shaft displaces the carton with a cushioned stroke to the 14-inch table belt. The belt then carries carton to the packing end of the table.

As the cartons reach the end of the belt conveyor, they come to rest on a dead plate. The plate, 8 by 12 inches, provides the housing of the safety feature, which operates the gate brackets and the shut-off switch. See figure 3. There are also guide plates that can be adjusted for small-size cartons.

A number of cartons can be accumulated conveniently on the belt conveyor during operation. The micro-switch controlling the table operation is connected to the gate brackets and shuts off the belt by pressure on the gates from a predetermined number of cartons riding it.

This table can handle any rate of cartons coming out of a regular closer unit. The number of cartons that accumulate in front of the packer depends on the speed of packing and the production rate of the candling line (fig. 4).

Figure 4

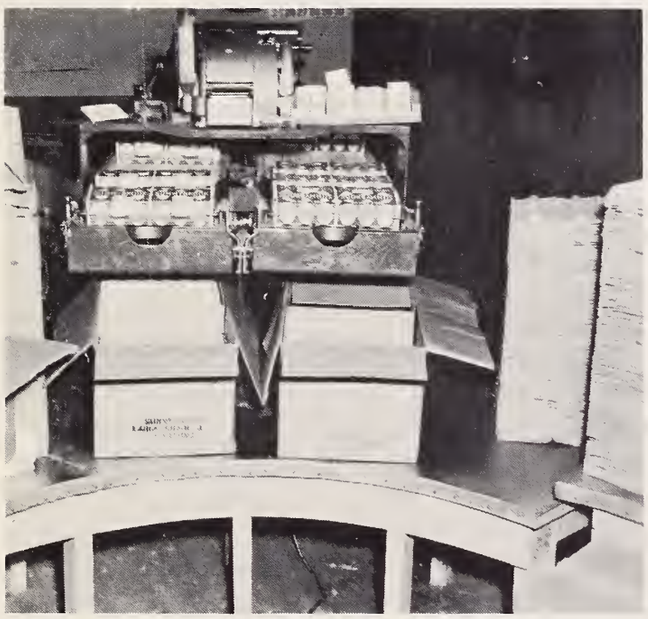


Figure 5

Figure 6

Tests Favorable

This table has been in actual operation in an egg-assembly plant the past few months. The test runs and subsequent operation have proved very favorable.

In actual operation, the table shut off when 16 to 20 cartons, depending on weight of cartons, accumulated on 1 belt conveyor. Both belts accumulated as high as 40 cartons before the automatic shut-off point was reached.

Work Station Layout

The table's rectangular shape lends itself to a more advantageous layout in the limited packing room space that exists in most egg assembly plants. It can be fitted into almost any existing layout.

A better work station layout is also possible with this table (fig.5). The design of the table has made possible an improved work station which improves the packing method considerably.

Safety Feature

The packer is actually paced by the table and can perform his work more rhythmically. The packer's unproductive time can be utilized more effectively because of the built-in safety feature. The increased output of the packer does not necessarily call for a faster pace of working. This table was designed to reduce fatigue, increase productivity, and decrease the hazard of breakage.

The distance the packer must reach is always constant--about 16 inches. There is no stretching, twisting, turning, and walking in order to reach cartons on the table. See figure 6. The new work station is built around the packer.

Figure 7.-Using both hands develops rhythmic motions and reduces fatigue.

Both hands can be used simultaneously at all times (figs. 7 and 8). If two packers are necessary because of the volume of work, packing can be done from both sides of the table.

A "T" support was provided to accommodate packing benches at the sides. The telescopic legs provide flexibility in height at the packing end or the closer-unit. The design is flexible enough to meet custom requirements such as volume or carton sizes without appreciably raising construction costs.

The Department is seeking a "public-use" patent for this table.

Figure 8.-Getting tape from a foot-operated machine reduces packing time.

Better Storage Practices Cut Peanut Marketing Costs

By C. B. Gilliland

Better quality peanuts on the market and an annual saving of $500,000 in marketing costs could be achieved through improved practices in storing and handling farmers' stock peanuts at plants of first buyers --shellers, crushers, and other dealers. These results are suggested in a study made by USDA's Agricultural Marketing Service.

Improvements could result from (1) the adoption by all buyers of practices as efficient as the average of the top one-third; (2) reduction in shrinkage (loss in weight) by as little as one-twelfth by adopting practices and equipment to reduce damage in handling and to improve rodent and insect control; and (3) reduction by 2 percent, from the present level of 4 percent or more, of the foreign material in peanuts delivered by farmers.

The estimated half-million-dollar annual saving takes no account of possible savings through farm storage. At present the seasonal peak storage stocks of peanuts at plants of first buyers are 2 to 3 times the monthly average stocks. Any farm storage would reduce peak commercial stocks and would contribute to more efficient use of storage.

Bags of peanuts are stacked up in peanut processing plant.

Full Report Issued By USDA

A report on the study, "Storage in Marketing Farmers' Stock Peanuts" --Marketing Research Report No. 88, has been issued by AMS. The authors of the report are Donald B. Agnew and Donald Jackson.

Peanuts compete, in their principal use as food, with other nuts, candy, spreads, sandwich fillers, and such snack items as popcorn and potato chips. Along the marketing channel, the peanuts must be stored until needed. The crop is harvested in the fall but the peanuts and peanut products are consumed more or less uniformly throughout the year.

If peanuts are to maintain their competitive position, their storage, as well as their production and processing, must be accomplished in the most efficient and economical manner possible. This is important to many of the 150,000 farmers who grow peanuts for the market. Among cash crops in several southern States in 1951 the farm value of peanuts was surpassed only by cotton and tobacco.

Peanuts Stored As Farmers' Stock

Peanut first buyers and manufacturers of consumer products store the market stock of peanuts and peanut products. Peanuts are stored as farmers' stock (unshelled and unsorted) until milled. After milling they are held as cleaned (roasting stock) or shelled peanuts, usually at consumer-product manufacturing centers, or as oil stock at sheller or crushing plants. Very few growers store their own crop.

Commercial operating data show that, for the usual storage period of 3 to 5 months, the cost of peanut storage at buyers' warehouses, excluding shrinkage, averaged about $6 per ton for 20 firms in the Southeast and about $9 per ton for 20 firms in the Southwest. Corresponding data were not available for the Virginia-Carolina area.

Storage cost varied with size of operation, length of storage, degree to which storage facilities were used, efficiency of handling methods and equipment, amount of shrinkage, and extent of loss in market grade.

Handling Cost

The cost for handling the peanuts into and out of storage varied from 10 to 20 percent of total storage and handling cost. Handling cost averaged $1.80 per ton for bagged peanuts in the Southwest and 67 cents per ton, or less than half as much, for bulk peanuts in the Southeast. Bulk handling cost varied from about 50 cents per ton for pneumatic unloaders and portable elevators, to about 80 cents per ton for permanently installed truck dumps and bucket elevators.

Cost of shrinkage of stored peanuts is additional to the cost of storage and handling shown in this study. For Runner peanuts in the Southeast, shrinkage cost averaged one-sixth less than storage and handling cost; for Spanish peanuts, shrinkage cost averaged one-fifth more

than storage and handling cost in both the Southeast and Southwest. Based on other data, estimated shrinkage cost for Virginia peanuts would appear to average much less than storage and handling cost, with storage costs in line with those for the Southeast and Southwest.

Over a 5-year period, the physical shrinkage in handling peanuts throughout an entire season ranged from about one-half of 1 percent to 9 percent. For 3 seasons, physical shrinkage averaged about half as much for buyers who did not process the peanuts, principally cooperatives, as for all buyers, both in the Southeast and the Southwest. Shrinkage varied greatly among the 3 areas, probably because of differences in harvesting, curing, and handling practices and in climate, with obvious interrelations among these factors. The least amount for each season occurred in the Virginia-Carolina area.

As peanuts move through marketing channels between farmers and consumers, use of space becomes less of a problem and maintenance of quality more difficult. Costs resulting from losses and inefficient use of space are important problems for first buyers. The length of time peanuts are stored as farmers' stock is limited by warm-weather problems, largely rancidity and insect damage. But shelling does not solve this problem.

Shelled peanuts, more susceptible to rancidity and insect damage than unshelled peanuts, require cold storage with its higher cost. Therefore, a major portion of the peanut supply is held as farmers' stock through most of the season. The problem of reducing the cost of storage, including the risk of deterioration, is primarily in the hands of the first buyers who hold the peanuts mostly as farmers' stock.

Need For Controlled Experiment

This study also indicated a need for a controlled experiment which would show the changes in farmers' stock peanuts while in storage and would indicate additional ways and means of maintaining quality and reducing costs. Such an experiment has been in operation concurrently with this study. AMS will issue a report on that study when it is completed.

Cooperative USDA and Alabama Agricultural Experiment Station peanut storage research project in Headland, Alabama.

San Francisco Plans For A New Wholesale Food Center

By Harry G. Clowes

During the summer of 1955, AMS, at the invitation of the mayor of San Francisco, made a study, in cooperation with California Department of Agriculture and the San Francisco Chamber of Commerce, of wholesale food handling in that city.

The study was originally requested to (1) determine the inadequacies of present marketing facilities and handling methods of fruits and vegetables industry, and (2) determine the kind of wholesale marketing facilities that would be required for efficient handling of fruits and vegetables. But it soon became apparent that needs for improvement were pressing for other foods. The study was expanded to include poultry, eggs, dairy products, meats, meat products, and dry groceries.

A Scale Model and Plan

As a result of this study, suggestions were offered to the city of San Francisco for the building of a wholesale food center. In November 1955, at a luncheon attended by some 300 businessmen and civic leaders, representatives of AMS's Transportation and Facilities Branch unveiled a scale model and plan for a 200-acre "Wholesale Food Center." The fruit and vegetable section, which is to be the nucleus of the food center, will cost $3,000,000.

The plan offered an annual potential saving of more than $3,000,000 in the city's food handling costs.

Further progress on the proposed food center has been reported. On November 27, 1955, the San Francisco Board of Supervisors accepted the tentative plan of the City Redevelopment Agency to redevelop an area of roughly 60 acres in the South Basin-Hunters Point section of the city for the location of the first unit of the proposed food center. Hearings by the Board of Supervisors to determine the final plan for redevelopment of the South Basin-Hunters Point site are scheduled for early March 1956.

Trading Area

Over 1,500,000 persons in the San Francisco metropolitan area west of San Francisco Bay are dependent upon the wholesale food markets of the city. During 1954, the equivalent of 52,051 carlots of fresh fruits and vegetables, poultry, eggs, dairy products, meats, meat products, and dry groceries--with a wholesale value of $294,156,000--were handled through the wholesale market facilities in San Francisco.

These food items were received from 48 States and many foreign countries. Retail stores, hotels, public institutions, wholesalers in the metropolitan area, U. S. military, and ship chandlers received 52 percent of the food handled in the San Francisco wholesale market. Most of the rest was moved to cities and towns within 50 miles of the city.

Present Facilities

Ninety-two wholesalers and 3 cold storage warehouses are located in the northeastern edge of the city--"The Washington Street Produce District." Trading was established here during the early gold mining days of California. At that time the shoreline of San Francisco Bay stretched along Battery St. Some of the produce houses were housed in old sailing ships that had been abandoned along that street by gold seekers.

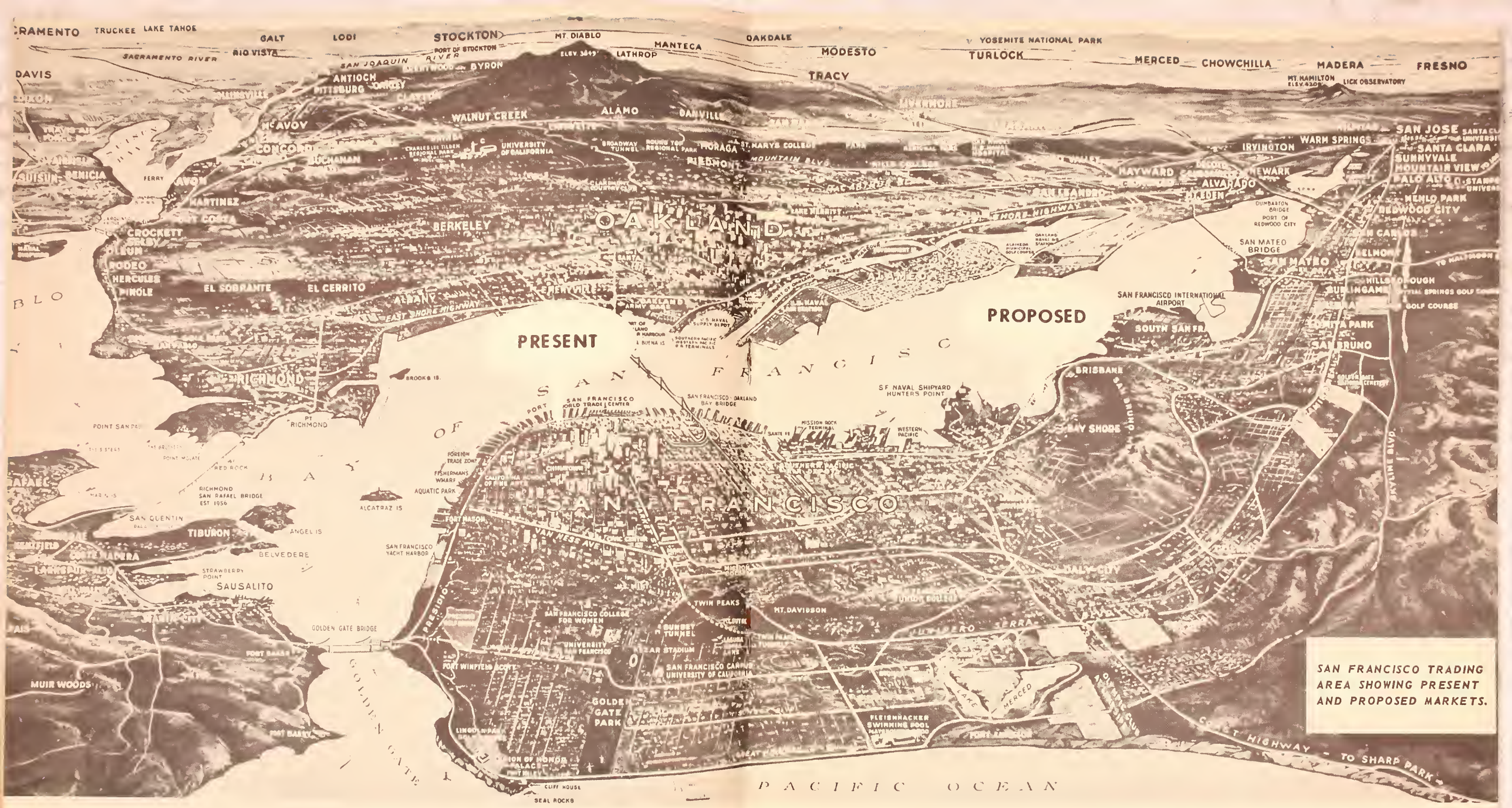
The produce district was destroyed by earthquake and fire in 1906. The present buildings were erected on the old site immediately after the earthquake. Some of the wholesale houses have been in use ever since. All types of wholesalers are located within this area. About 79 wholesalers, 8 packer branch houses, 3 chainstore warehouses, and 5 public warehouses are in other locations throughout the city.

Defects of Present Facilities

AMS's analysis of wholesale food handling facilities revealed many defects in the present wholesale market. All of these defects make operating costs excessive and prevent efficient handling of food. For example, many wholesalers are using outmoded, multistory buildings of antiquated design; they have inadequate aisle space, poorly located steps or elevators, structurally weak floors, partially flooded basements, no front or rear loading platforms, and little mechanical handling equipment.

Handtrucks moving products through congested streets.

Due to lack of space, wholesalers stack perishables in the streets. Refrigeration facilities are often inadequate, significant quantities of food spoil. In many instances, a single entrance serves for both receiving and shipping. This impedes the flow of supplies. Many wholesale stores can be reached only by handtrucks that move products through congested sidewalks and streets.



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Most dealers lack direct rail connections to their stores. They must cart food received by rail from the team track yards to stores. This means costly charges for cartage. Such cartage adds to deterioration, breakage, shrinkage, and loss by theft; it represents a marketing cost that could be greatly reduced by modern facilities for receiving and handling rail shipments as well as truck arrivals.

Traffic congestion in and around the Washington Street market area has been acute for many years. Hundreds of motortrucks of all types haul supplies to and from the stores in this district. At peak periods there are major traffic tie-ups. Some owners of large incoming trucks no longer bring their loads to San Francisco because of the traffic situation. These conditions increase the cost of handling food and result in considerable deterioration of perishable products. Little can be done, apparently, to correct or improve traffic conditions within this area.

The scattering of the wholesale food business in various parts of the city makes buying and selling difficult and costly. The hours for buying and selling are not very well regulated in any of the markets. A wholesaler fixes his own work schedule, although most try to adhere to an 8-hour day, 5-day week. The lack of coordination among markets in scheduling business hours makes it difficult for buyers to arrive at times when they can make full selections and when the best quality produce is available. Prolonged selling hours also tend to produce wide fluctuations during the day in prices for some types of food products.

Facilities Proposed

Buildings are arranged, on the general plan proposed by USDA, to house in the same area all wholesalers handling the same general type of food product. The commodity areas are arranged in a sequence. Thus, buyers who usually need supplies of several groups of commodities do not have to travel far to obtain supplies of related items.

The site selected is in the South Basin-Hunters Point area. This area consists of about 200 acres, including the expansion area for allied food industries. The amount of space recommended for wholesalers who would occupy stores in the market is considerably less than they occupy in present facilities because many of them now occupy buildings not designed for handling efficiency.

Facilities planned for fruit and vegetable wholesalers are designed to handle about 19,431 carlots. This volume represents the volume of the 73 wholesalers in the city of San Francisco, but excludes the 1,400 equivalent carlots distributed by chainstore organizations.

The volume of poultry and egg and dairy business which the food center would eventually handle is estimated at 5,526 equivalent carlots. Facilities are planned to handle this volume. Of this amount, 3,475 cars are largely live and dressed poultry. This represents the entire amount of these items handled by the 15 wholesalers in the city.

Facilities are planned for meat wholesalers and processors whose estimated volume in 1954 was about 5,697 carlots. This is based on present needs as expressed by meat wholesalers and indicated by a survey of present facilities.

Facilities are suggested in detached buildings for 3 dry grocery wholesalers who handled about 6,400 equivalent carlots in 1954. These buildings contain about 137,000 square feet of space.

Team Track Space Needed

In the fruit and vegetable section, team track space is needed for (1) deliveries made direct from cars on team tracks to the trucks of buyers and to delivery trucks, (2) additional track capacity during peak seasons, (3) some less-than-carlot receivers where several participate in the contents of a car, and (4) consignees who do not have stores in the market. One team track is provided parallel to the house tracks and separated from them by an 80-foot street. It has a capacity of 20 cars.

An expansion area is suggested for allied industries, such as frozen foods, imported groceries, public refrigerated warehouses, equipment, supplies, etc., directly south of the site of the food center.

The arrangement of the facilities needed now should be planned with a view toward an orderly development of the overall market in the future. The facilities discussed have been laid out on the basis of the space in the South Basin-Hunters Point site. These overall plans will undoubtedly change many times before the project is completed. Some of the land may not be available and conditions will change.

Estimate of Potential Savings

The principal justification for constructing a new wholesale food center in San Francisco is that such a change would cut costs through increased marketing efficiency. Estimates have been made of potential savings that might be effected by establishing a new food center.

Estimated savings in new modern facilities for 37,458 equivalent carlots received by truck in 1954 for the 4 commodity groups studied ranged from $37.28 per car for dry groceries to $45.20 per car for fruits and vegetables. The total savings would amount to $1,570,424 yearly. Estimated savings for 5,992 equivalent carlots only, received by rail and subject to cartage charges in addition to porterage and internal handling costs, ranged from $80.59 per car for fruits and vegetables to $99.28 per car for dry groceries. Savings for rail receipts were estimated to be $511,963. Therefore, total savings possible in cartage, porterage, and internal handling are $2,082,387 over estimated present costs.

Estimates of partial costs owing to spoilage, deterioration, breakage, and pilferage were determined during the study from many of the wholesalers and compared with costs in similar situations where food items are handled in modern facilities. The potential savings for these items were estimated at $783,466 per year.

Potential estimated savings in truck and labor time by the elimination of the present serious traffic situation and installation of adequate unloading and loading facilities would approximate $773,660 per year.

The benefits of a new wholesale food center which cannot be measured in dollars would undoubtedly be as great as those discussed. Such benefits would be shared by wholesalers, buyers, farmers, railroads, trucking corporations, market employees, consumers, and the city of San Francisco.

Recording Salesmen's Orders

By Theodore H. Allegri

Four frozen-food wholesalers, each employing 5 or more salesmen, reduced marketing costs and increased plant productivity by installing recording equipment to take salesmen's orders. This information was revealed in an AMS study of order processing systems in these 4 plants.

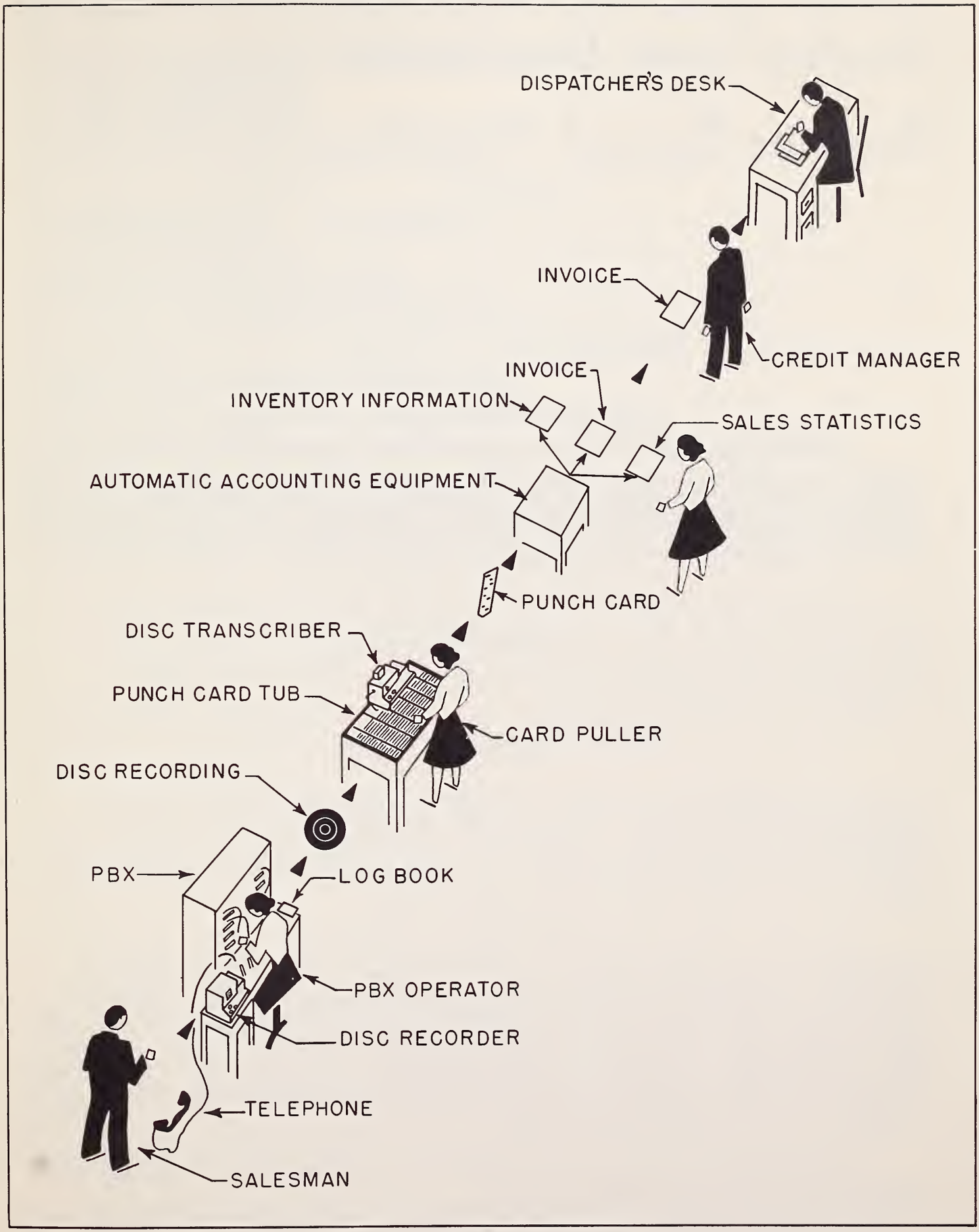
The use of recording equipment in these plants resulted in a 160 percent increase in productivity and a saving in labor costs of 26 to 50 percent. Disc-type recording and transcribing machines were used in 3 plants and belt-type in the fourth. When order takers use longhand order sheets to take customer's orders, the time expended for 100 orders is approximately 5.51 man-hours. The mechanized processing required only 2.11 man-hours to handle 100 orders.

All of the plants studied use the recording equipment in the same way and all of them use automatic accounting machinery. Salesmen call in 5 to 7 orders at a time. A switchboard operator places the calls on recording machines. The recordings are given to the punchcard selector who plays them back on a transcribing machine. The selector then pulls the customer's name, address, and credit information along with the product punchcards.

The punchcards selected for the orders received during the day are accumulated for processing by automatic accounting machinery, which prints an invoice for each order. These machines also provide the distributor with summaries of sales. Additional statistics--for example, volume sold by each salesman, quantities of each product sold, inventory information --are also obtained from the punchcards.

In some instances, recording machines replaced order clerks. In one plant the number of order clerks was reduced from 6 to 2. Some order clerks are necessary for handling customers' calls, complaints, and adjustments. Recording equipment may eliminate overtime resulting from selecting machine tabulation cards from handwritten order lists. This equipment records orders with fewer errors than the systems used before, reduces phone costs in some instances, and eliminates switchboard overloading. Salemen are able to spend more time on the road selling and making new customer contacts.

Customers calling in orders seldom have to wait for an order taker to receive their orders. Invoices are prepared at a constant pace throughout the day, and the dispatcher is able to make up his truck routes faster. Because all invoices are received from the machine tabulation department during regular office hours, little or no overtime is necessary.


DISPATCHER'S DESK
INVOICE
CREDIT MANAGER
INVOICE
INVENTORY INFORMATION
SALES STATISTICS
AUTOMATIC ACCOUNTING EQUIPMENT
PUNCH CARD
DISC TRANSCRIBER
PUNCH CARD TUB
CARD PULLER
DISC RECORDING
PBX
LOG BOOK
PBX OPERATOR
DISC RECORDER
TELEPHONE
SALESMAN

Surplus Food Distribution Reaches Record Heights

By Philip Fleming

A new record for the distribution of surplus foods was set during the last 6 months of 1955, as AMS pushed its campaign of surplus disposal. In that period, a total of 760,900,000 pounds of food was donated in a drive by the Department to reduce the surplus--and to make good, constructive use of it.

Here's where all that food went:

In this country, distribution increased to 290,400,000 pounds for the last 6 months of 1955--20 percent larger than the 242,400,000 pounds in the same period of 1954. This food went to about 11,000,000 school children, to 1,000,000 needy persons in charitable institutions, to 100,000 needy Indians, and to 2,250,000 needy persons in family units.

Foreign distribution climbed to 470,500,000 pounds during the 6-month period, or 133 percent larger (2-1/3 times as large) than the 201,900,000 pounds in the last half of the year 1954. The food was distributed by 18 private United States welfare agencies to needy persons in 70 foreign countries.

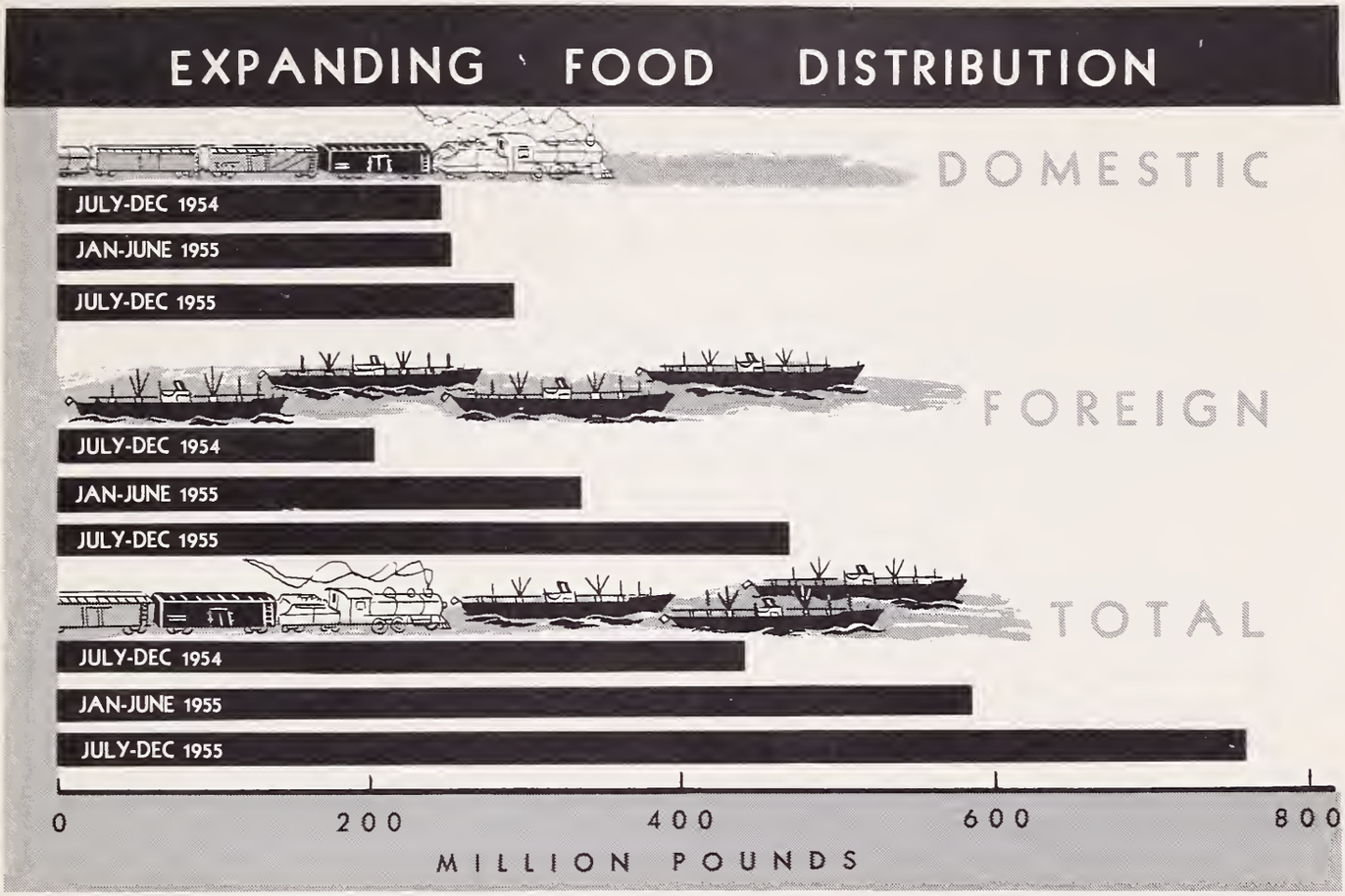
Direct Distribution Program

Distribution of so sizable an amount of food makes this Direct Distribution Program--its official name--an important factor in farm marketing. Here are some of the facts about the program--its past, present, and future--designed to be of special interest to all who are concerned with marketing agricultural products.

All of the foods donated through the program are acquired by the Department in the operation of its price support and surplus removal programs. Commodities given to users in this country during the half-year period included: dry beans, butter, cheese, nonfat dry milk solids, shortening, rice, fresh prunes, sweetpotatoes, wheat flour, and cornmeal. After this country's needs for these commodities had been met, butter and butter oil, cheese, nonfat dry milk solids, and shortening were also made available for foreign distribution.

Distribution of foods in this manner is nothing new, of course--it has extended back more than 20 years.

Why, then, the big increase in recent months?



The chart shows graphically how the movement of foods under the Direct Distribution Program has been expanded in the past 18 months.

More Food Available

The principal reason, of course, is that surpluses, too, have reached record heights lately--making more food available for donation. At the same time, the Department has been making every effort to relieve the price-depressing burden of these surpluses.

USDA attacks the problem in many ways, including domestic and foreign sales, barter, etc. The program of donating the foods, to persons who are eligible under law to receive them, is administered by the Food Distribution Division of the Agricultural Marketing Service.

Distribution in This Country...

Domestic distribution of these surplus foods is operated under a plan which follows the policy of full utilization of State government facilities, and the principle that relief for the needy is a primary responsibility of the States. The Department delivers the commodities, free of cost, in carload lots to States after they have made satisfactory arrangements for distribution. State agencies determine the eligibility of recipients of these foods, and take full responsibility for all distribution within the State.

This half-year period saw frequent use of a basic principle of the distribution program--that all such foods are made available immediately to help relieve distress resulting from disaster.

Surplus foods were used in relief feeding in the wake of the September 1955 floods in the Northeast and the Southeast, and in the Tampico, Ciudad Madero, and Altamira areas of Mexico. In December 1955, shipments of pork products were flown to California to the aid of flood victims in Humboldt County.

...and in Foreign Countries

The largest gains during the period were made in the foreign distribution program, stepped up under the Agricultural Trade Development and Assistance Act. The legislation authorizing the distribution program gives priority to domestic needs, and sufficient quantities are first reserved to satisfy all requests for donations in this country. But, after these needs are met, every effort is made to use the surplus foods to feed hungry persons in foreign countries.

Private welfare agencies in the United States are given surplus foods for distribution by them in foreign countries, under an approved and carefully supervised plan--18 of these agencies were actively distributing food to the people of some 70 countries.

This program of foreign distribution is administered by AMS , but the International Cooperation Administration is responsible for approving the agencies and their programs. The ICA also provides funds for payment of ocean transportation for most shipments. Following ICA approval, agencies submit estimates of their needs, and proposed plans of operation for each country. As commodities are made available to them, the agencies submit orders to AMS which--when signed by AMS--become contracts binding the agencies to their terms and conditions.

Expansion Ahead

Part of the increase in the last half of 1955 represented the first quantities of wheat flour and cornmeal distributed under authority of Public Law 311, 84th Congress, which authorized this distribution as a strictly domestic relief measure for needy persons only. The quantities distributed will continue to expand, as this program moves forward. Also, AMS has now purchased a total of 78,106,500 pounds of pork products (as of January 13) which are being distributed to users in this country. This program will be continued and intensified.

Surplus distribution in this country will be expanded, too, as more States come into the program of donation to needy persons in family units, and distribution is made to more people in the States now in the program. The approval of distribution plans for New York and Louisiana, recently, raised the number of States participating in this phase of the program to 37. Alaska is also in this program.

In addition, the broadened availability of commodities recently announced by the Department will result in increased distribution by making wheat, corn, rice, and dry beans available for foreign shipment--and making wheat and corn available to schools and institutions in this country.

Poultry Chill Tank Tipper

By Rex Childs and John Hamann

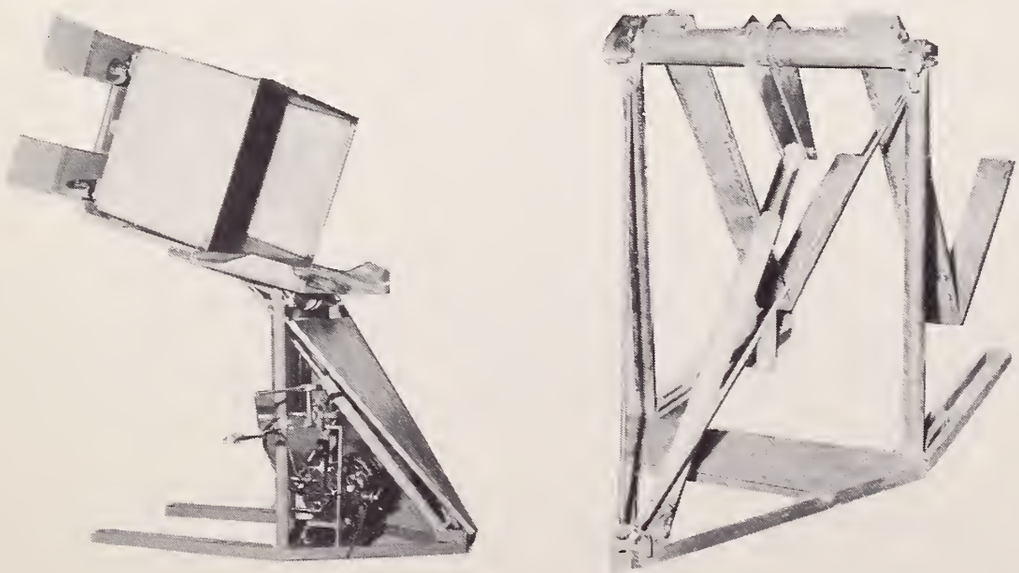
A significant labor-consuming operation in poultry-dressing plants is the transfer of ready-to-cook birds from 230-gallon chill tanks to the packing table. This operation generally is performed manually. It is a laborious, disagreeable, and time-consuming task. The worker doing the job must stoop repeatedly and handle chilled birds with fragments of ice clinging to them. It is a task disliked by plant workers.

Some plant managers have devised mechanical means for dumping chill tanks. But these devices were designed for a specific plant. They do not have features generally applicable to all plants.

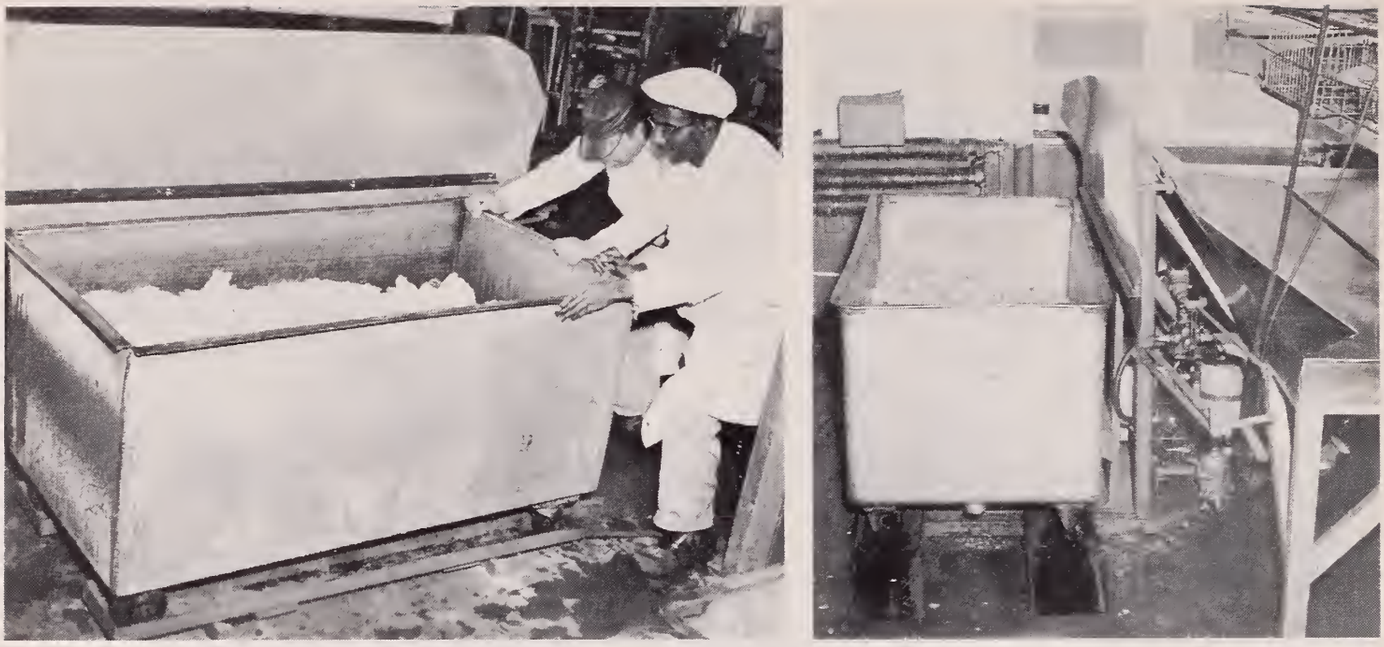
Recently, agricultural engineers of the University of Georgia and industrial engineers of USDA's Agricultural Marketing Service designed and constructed a device that reduces labor cost and handling discomfort by removing birds from chill tanks mechanically. The principle involved in the device is an adaptation of the 1-ton pallet box tipper designed and developed by A. D. Edgar, AMS engineer, at the Red River Valley Potato Research Center (MARKETING ACTIVITIES, January 1956).

Description of Tank Tipper

The tipper is simple in design. The sturdy frame (square iron tubing 3/8" x 2-1/2" x 2-1/2") is arc welded together. It requires no machining of parts. Two centrally located, 4-foot upright columns support a centrally located horizontal shaft. A piece of pipe, fitting this shaft snugly, is attached to a fork similar to that on an industrial forklift truck. The fork rotates on the shaft when activated by a diagonal thrust from the piston of a hydraulic cylinder.



(Left) Tipper in "up" position. (Right) Tipper with rail, pump, and motor removed.



(Left) Tank of poultry positioned on "tipper" rails. (Right) The tank is now ready for emptying.

Runners of shallow channel iron, 9 inches wide by 5-1/2 feet long, similar to those on an automobile grease rack, are welded about 3 feet apart to the bottom or horizontal part of the fork. A piece of angle iron is attached to the vertical side of the forks above the point where the lip of the tank rests. It prevents the tank from sliding off the tipper when tilting for emptying. Above the angle iron ledge a sheet of stainless steel with up-swept corners is attached to provide a poultry chute to the packing table.

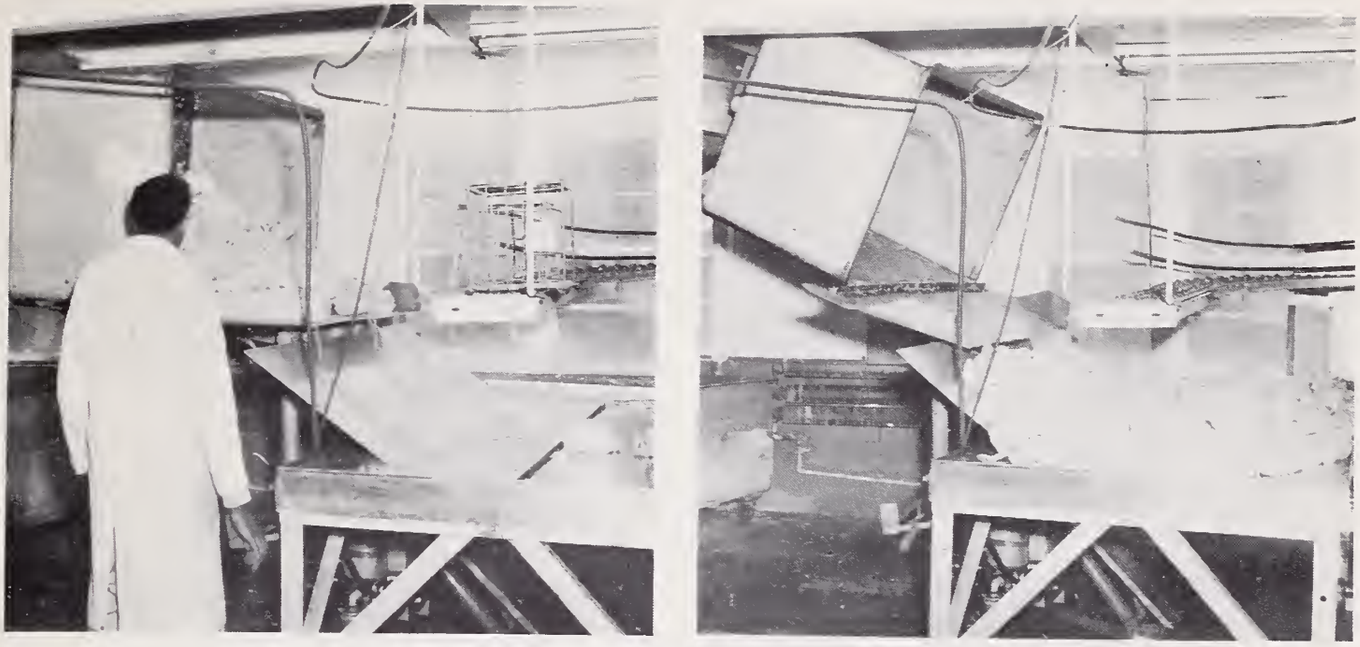
Tipper Adaptable to Packing Operations

The tipper is adaptable to packing operations in most plants because its positioning is limited only by ceiling heights of less than 9 feet. It requires but little more space than is required for manually removing poultry from chill tanks and can be used in congested areas. Birds can be dumped onto practically any type packing table or into a hopper.

After the chill water and cap of chilled ice is removed from a tank of chilled poultry ready for packing, the tank is run into position on the channel iron rails. The fork of the tipper rotates the tank of poultry in a little more than a quarter circle. The stop position is controlled by limiting the piston strokes.

Field tests have established that the incline necessary to have the birds slip from the tank to the packing table is less than the angle at which the tank might topple from its tipped position. Thus it is not necessary to fasten the tank to the fork. If added precaution is desirable, a fastening clip can be installed.

The unit is designed with a load safety factor that makes it capable of handling approximately eight times the average load. Thus it can withstand impact loads and endure rugged treatment. A check valve prevents the tank from falling freely when the control valve is opened.



(Left) Chill tank near emptying position. (Right) A quick transfer of poultry from tank to packing table.

Thus severe impact on the mechanism is avoided if the freely falling tank is stopped suddenly.

Empties Tank in 10 to 15 Seconds

Time studies show that approximately 10 man-minutes are required to empty an average tank of birds manually. The tipper empties a tank in from 10 to 15 seconds without discomfort of handling ice-encrusted poultry. The time saved by using the tipper allows the operator to position another full tank of birds while the previous tank of birds is being packed. In this way a constant supply of birds is available for the packers, which eliminates wait time of the packing crew between tanks.

One Man Can Operate Tipper

One man can operate the tipper. But the helper who assists in moving full tanks from the chilling area usually helps the "tipper" operator roll the tank onto the "tipper" tracks.

Field Tested

Field tests of the tank tipper, made over a period of four weeks, show encouraging results. A disadvantage of this device over the manual method is created by the residue ice dumped on the table with the birds. This disadvantage can be minimized by using a packing table designed to permit the ice to fall to the floor as birds are packed. A slightly elevated packing station near or over a floor drain minimizes discomfort to the packers and facilitates rapid drain-off of melting ice.

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Recording Salesmen's Orders

Use of recording equipment in frozen-food wholesale plants reduced marketing costs and increased plant productivity. Story on page 16.